

REMARKS

Concerning "Ti-Nb-Al alloy" in Claim 1, Applicant has combined Claims 1 and 2 and deleted "Ti-Nb-Al alloy" in the amended claims. The present invention in the amended claims are not anticipated by Matsuo (US 2002/0033717).

Concerning "Ti-Nb-Mo", "Ti-Nb-Ge" and "Ti-Nb-Ga" alloys in Claim 1 and 3-5:

(1) Concerning the Examiner's statements:

The Examiner states that Hanada (US 6,786,984) teaches a biocompatible titanium alloy comprising 3-6% Sn, 8-20% Nb, a balance titanium and Hanada teaches said alloy is superelastic and exhibits shape memory effect.

And the Examiner further states that Hanada does not teach the addition of Mo, Al, Ge, Ga or In, but ASM Handbook Vol. 2 teaches that Mo is added to titanium alloys for the known purpose of (as a beta stabilizer) promoting hardenability and short-time elevated temperature strength.

The addition of Ge, Ga, and Mo are held to be result effective variables, wherein the expected result is stabilization of the alpha crystal structure and promoting hardenability and elevated temperature strength. Therefore, it would have been obvious to one of ordinary skill in the art to add Mo, Ge, or Ga as taught by the ASM Handbook.

(2) Concerning our arguments:

a. The column in the ASM Handbook Vol. 2 only shows that "Aluminum is the primary stabilizer in titanium alloys. Other alloying elements that favor the alpha crystal

structure and stabilize it by raising the alpha-beta transformation temperature include gallium, germanium, carbon, oxygen, and nitrogen".

b. The third column in the ASM Handbook Vol. 2 only teaches that "Molybdenum is an important beta stabilizer that promotes hardenability and short-time elevated-temperature strength. Molybdenum makes welding more difficult and reduces long-term, elevated-temperature strength".

c. These descriptions only concern general features of gallium, germanium and molybdenum.

d. A titanium alloy, which simply includes gallium and/or germanium as an alpha stabilizer, does not show the shape recovery characteristic shown in Table 4 D-10 ~ D-12, Table 5 E-10 ~ E-12 of the present invention.

That is, the Ti-Nb-Ge alloy No. D-6, which includes 20% Nb, 10% Ge, shows the shape recovery characteristic, however, the Ti-Nb-Ge alloy No. D-10, which includes 20% Nb, 15% Ge, does not show the shape recovery characteristic, even though both titanium alloys include 20% Nb.

The Ti-Nb-Ge alloy No. D-1 which includes 5% Nb, 3% Ge, shows the shape recovery characteristic, on the other hand, the titanium alloy No. D-11, which does not include Nb, but includes 3% Ge, does not show the shape recovery characteristic, even though both titanium alloys include 3% Ge.

e. Thus, it would not be obvious for one of ordinary skill in the art to arrive at the claimed inventions by a general feature "gallium and germanium are alpha stabilizers" shown in the ASM Handbook.

f. A titanium alloy, which simply includes molybdenum as a beta stabilizer, does not show the shape recovery characteristic shown in Table 2 B-10 ~ B-12 of the present invention.

That is, the Ti-Nb-Mo alloy No. B-6, which includes 20% Nb, 10% Mo, shows the shape recovery characteristic, however, the Ti-Nb-Mo alloy No. B-10, which includes 20% Nb, 15% Mo, does not show the shape recovery characteristic, even though both titanium alloys include 20% Nb.

The Ti-Nb-Mo alloy No. B-1 which includes 5% Nb, 5% Mo, shows the shape recovery characteristic, on the other hand, the titanium alloy No. B-11, which does not include Nb, but includes 5% Mo, does not show the shape recovery characteristic, even though both titanium alloys include 5% Mo.

g. Thus, it would not be obvious for one of ordinary skill in the art to arrive at the claimed inventions by a general feature "molybdenum is a beta stabilizer" shown in the ASM Handbook.

Conclusions

As above-mentioned, we have combined old Claim 1 and 2 and delete "Ti-Nb-Al alloy" from the new Claim 1. Thus, the present inventions in the amended Claims 1, 3, 4 and 5 are not anticipated by Matsuo.

The present inventions in the amended Claims 1, 3, 4 and 5 concerning "Ti-Nb-Mo alloy", "Ti-Nb-Ge alloy" and "Ti-Nb-Ga alloy" have inventive steps as above mentioned. Thus, the present inventions in the Claims 1, 3, 4 and 5 now have patentability.

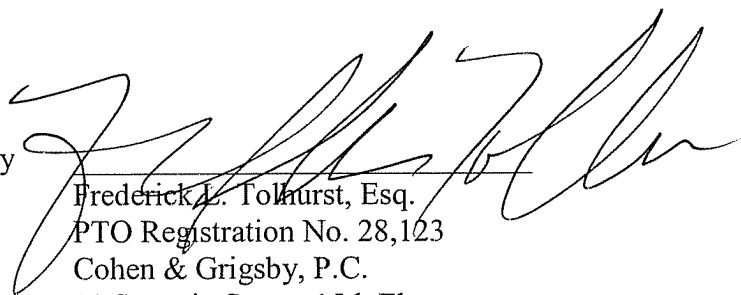
Applicants respectfully submit that the patent application and the claims, as amended, therein are in a condition for allowance. Accordingly, reconsideration and early allowance of the claims are respectfully requested.

The Commissioner is hereby authorized to charge Deposit Account No. 03-2026 for any fees associated with this amendment or credit any overpayments.

Applicants would appreciate a telephone call to the undersigned attorney of record should the Examiner have any questions or comments with respect to this response for purposes of efficiently resolving same.

Respectfully submitted,

By



Frederick L. Tolhurst, Esq.
PTO Registration No. 28,123
Cohen & Grigsby, P.C.
11 Stanwix Street, 15th Floor
Pittsburgh, PA 15222-1319
(412) 297-4900